

*Banisteria*, Number 24, 2004

© 2004 by the Virginia Natural History Society

A MALFORMED FOWLER'S TOAD (*BUFO FOWLERI*) FROM THE SHENANDOAH VALLEY OF VIRGINIA -- Deformities and malformations in anurans are manifested in a variety of ways (Meteyer, 2000; Meteyer et al., 2000). Most of those described in the literature are visible externally and include ectromelia, brachydactyly, polydactyly, brachygnathia of both sets of limbs and kyphosis of the vertebral column (Ouellet et al., 1997; Ouellet, 2000). The North American Reporting Center for Amphibian Malformations website (<http://frogweb.nbio.gov/>) includes several observations of deformities in frogs. The most commonly-reported malformation in *Bufo fowleri* is an extra forelimb reported from Illinois, Indiana, Maryland, North Carolina, and Tennessee. Most examples reported in this web site for Virginia are limb malformations in ranids. Only one Virginia example was reported for toads through 2003, an American Toad (*Bufo americanus*) with multiple limbs and one extra forelimb from Haysi, Dickenson County. This note describes a forelimb malformation in a Fowler's Toad from the Shenandoah Valley.

On 14 July 2004, one of us (BB) found a malformed juvenile *B. fowleri* (32 mm SVL) among hundreds of others that had been observed between 1 and 22 July at a Clarke County, Virginia, residence (4.8 km W Millwood; 39° 03' 76.7" N, 78° 00' 09.9" W). This was the only toad of many that had fallen into the swimming pool or entered the house that had a malformation. The habitat is mostly artificial, with gardens, lawn, swimming pool, and goldfish pond. The residence is surrounded by mostly mature hardwood forest except for a three-acre pasture containing water from a run-off pond. Other anurans in this area include American Bullfrogs (*Rana catesbeiana*), American Toads, Eastern Gray Treefrogs (*Hyla versicolor*), Eastern Spadefoots (*Scaphiopus holbrookii*), Northern Green Frogs (*Rana clamitans*), Pickerel Frogs (*Rana palustris*), and Spring Peepers (*Pseudacris crucifer*).

The juvenile toad had a partially-developed left forelimb with a severely malformed hand, in addition to the two normal forelimbs (Fig. 1). The extra limb was shorter than the two normal limbs and projected outward anterior to the normal left forelimb and near the margin of the throat. The articulation with the pectoral girdle was not ascertained because the frog was maintained alive. The humerus appeared shortened and underdeveloped, as did the radius and ulna. The hand had only the base, with seven, short undeveloped finger buds attached.



Fig. 1. Malformed Fowler's Toad (*Bufo fowleri*) from Clarke County, Virginia.

The toad did not seem hindered in any way because the extra limb was shorter than the other two and did not touch the ground during locomotion. Feeding behavior was normal. The toad was kept alive for photographs and educational presentations and then released at the point of capture. This is the first description of brachydactyly and polydactyly in *Bufo fowleri* from Virginia and the second report of an extra forelimb in toads from the state.

#### LITERATURE CITED

- Meteyer, C. U. 2000. Field guide to malformations of frogs and toads with radiographic interpretations. Biological Science Report, USGS/BRD/BSR-2000-0005. 18 pp.
- Meteyer, C. U., I. K. Loeffler, J. F. Fallon, K. S. Converse, E. Green, J. C. Helgen, S. Kersten, R. Levey, L. Eaton-Poole, & J. G. Burkhart. 2000. Hind limb malformations in free-living Northern Leopard Frogs (*Rana pipiens*) from Maine, Minnesota, and Vermont suggest multiple etiologies. *Tetratology* 62: 151-171.
- Ouellet, M. 2000. Amphibian deformities: current state of knowledge. Pp. 617-661 *In* D. W. Sparling, G. Linder, & C. A. Bishop (eds.). *Ecotoxicology of Amphibians and Reptiles*. Society of Environmental Toxicology and Chemistry (SETAC), Pensacola, FL.

Ouellet, M., J. Bonin, J. Rodrigue, J.-L. DesGranges, & S. Lair. 1997. Hindlimb deformities (ectromelia, ectrodactyly) in free-living anurans from agricultural habitats. *Journal of Wildlife Diseases* 33: 95-104.

Joseph C. Mitchell  
Department of Biology  
University of Richmond  
Richmond, Virginia 23173

Belinda Burwell  
P. O. Box 288  
Millwood, Virginia 22646

*Banisteria*, Number 24, 2004  
© 2004 by the Virginia Natural History Society

NEW DISTRIBUTION RECORDS FOR *ELEATES DEPRESSUS* (RANDALL) IN THE SOUTH-EASTERN UNITED STATES (COLEOPTERA: TENEBRIONIDAE: BOLITOPHAGINAE) AND NOTES ON THESE OCCURRENCES -- Scarcity in collections adds interest to certain small beetle species that are obscure, poorly documented, and for which the biology is unknown. *Eleates depressus* (Randall) is such an example, with few published records and scant information on its natural history. Since its description (Randall, 1838) from Hallowell, Maine, occurrences of this small bolitophagine (Fig. 1) have been reported in state listings from Michigan (Spilman, 1973), New Jersey (Smith, 1900), New York (Leonard, 1928), southwestern Pennsylvania (Hamilton, 1895), and Wisconsin (Dunford & Young, 2004), and from four provinces in eastern to central Canada (Bousquet & Campbell, 1991). Horn (1870) knew the species from "Middle and Eastern States and Canada" but recent U.S. regional works (Downie & Arnett, 1996; Aalbu et al., 2002) list only the Maine record. These records, and the lack of any listings in catalogs of the southern states, suggest a boreal distribution. However, recent captures and newly recognized specimens in collections from the southeastern United States, including the Coastal Plain, demonstrate otherwise, as reported here.

#### NEW STATE RECORDS

**GEORGIA:** one specimen labeled: "Ga. Clarke Co., Athens, bl trap, 6-7 July 1973, R. Turnbow" (in R. H. Turnbow collection) and two specimens labeled: "Dunwoody [De Kalb County] Ga., 1955 / Collr. E. F. Mehinick" (in Ohio State University Collection).

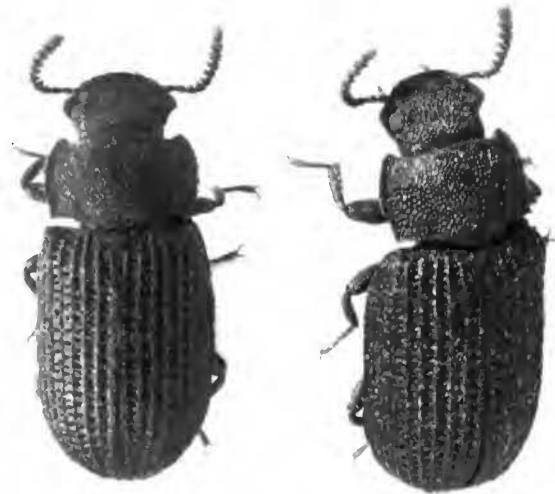


Fig. 1. *Eleates depressus*, dorsal (left) and dorsolateral (right) views; length of beetle, 3.7 mm. Specimen from Calvert County, Maryland.

**MARYLAND:** one specimen labeled: "MARYLAND: Calvert Co., Flag Ponds area 3 km SE Long Beach, 38° 23' N, 76° 27' W, 16 July 1988, J. M. Hill, collr./ Collected at black light near sand beach" (in U.S. National Museum, Smithsonian Institution).

**TENNESSEE:** five specimens labeled: "TENNESSEE: Great Smoky Mountains National Park / Trail to Ramsey Cascade; 13-V-1986, Paul Skelley" (in Florida State Collection of Arthropods) and two specimens, apparently from the same series, labeled: "Grt. Smokey Mts. Nat. Pk., trail to Ramsey Cascade, Tenn., 13 May 1986, P. Skelley" (in Ohio State University Collection).

**VIRGINIA:** one specimen labeled: "VA: Henrico Co., 4 km upstream Bottoms Bridge, Chickahominy R., Wilson Farm, 3 June 2000, I. T. Wilson" (in Virginia Museum of Natural History).

#### BIOLOGY

Other members of the Bolitophaginae are known to feed on and breed in the sporocarps of polypore fungi on dead wood and are restricted to certain species (Leschen, 1990). To date, no host fungus has been associated or identified for *E. depressus*. I have seen host records on specimens (in UCBC) of the two congeners from the western states: *Eleates occidentalis* Casey, labeled "ex *Fomes*" and *E. explanatus* Casey, labeled "*Fomes pinicola*" [*Fomitopsis pinicola* (Swartz: Fries) Karst.] and "*Fomes officinalis*" [*Fomitopsis officinalis*] (Villars.: Fr.) Bondartsev & Singer]; a series of the latter species is also labeled "*Draperia*